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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/689,995
Filing Date: October 22, 2003
Appellant(s): KAMON ET AL.

Leana Levin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 5, 2008 appealing from the Office action mailed January 4, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The amendment after final rejection filed on August 5, 2008 has not been entered. A copy of the claims on appeal is attached at the end of the Examiner's Answer.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The claims contain substantial errors as presented in the Appendix to the brief since the Appellant has attached a copy of the claims not entered, see above. Accordingly, the claims are correctly written in the Appendix to the Examiner's Answer.

(8) Evidence Relied Upon

JPU04-115592

Takagi

10-1992

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi, JP U 4-115592 (cited by applicant in IDS filed 1/06/04).

Takagi discloses an articulated manipulator comprising:

- A base (6)
- A plurality of links (see all Figures) arranged in series
- Joints (23, between links 17, 18 and 19) pivotally connecting the adjacent links
- Coaxial joints (figure 5 at reference t) and diagonal joints (at character 21) wherein the diagonal joints each connecting the two adjacent links so that the adjacent links are able to turn about an inclined rotation axis inclined at an angle of 45 degrees to the axes of the two adjacent links
- One specific link (18) where the two rotation axes which the adjacent links are turned relative to the specific link are perpendicular to each other
- the first link (17) is connected to a base (6)
- the second link can have two parallel axis of rotation (19)
- the joints can be made of two sublinks (link 18 is made up of two links 18a and 18b)
- a twist unit for connecting a predetermined terminal device (8) to the sixth link so as to be rotatable about a rotation axis of the last link

Takagi does not disclose the specific arrangement of the links wherein the second and third link are connected by a diagonal joint with a rotation axis parallel to the the rotation axis of diagonal joint between links one and two, the third and fourth links are connected by a diagonal joint with a perpendicular axis of rotation, the fourth and fifth link are connected by a coaxial joint and the fifth and sixth link are connected by a diagonal joint.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the links in the specific order, since rearranging parts of an invention involves only routine skill in the art.

(10) Response to Argument

The Appellant argues that claims 8-10 are not obvious over Takagi for the following reasons:

- A. One of ordinary skill would not have rearranged the links because:
 - 1. just because links are known does not render any robot arm having links and joints unpatentable
 - 2. there is no motivation or reason to combine in the prior art
 - 3. there are in infinite number of possibilities for rearrangement (citing KSR)

In response to Appellants arguments, it is the position of the Examiner that Takagi disclose all the structure of each link being claimed by the Appellant as set forth above which renders all of the links known prior to the invention by the Appellant. One

of ordinary skill in the art in designing a robot arm for a particular purpose would arrange the known links in such a way that the desired end result is achieved. Since all the links are known a particular arrangement of the links would indeed be obvious to one having ordinary skill in the art. It is noted that the Appellant is not contesting the fact that Takagi discloses the structure of the links, only the arrangement is being contested. There is also not an infinite number of arrangements possible with the links disclose by Takagi. One of ordinary skill in the art would realize that in connecting the links if, for example, link 3 has a diagonal surface a coaxial surface can not be attached. Thus, since only mating surfaces can be connected to each other the number of possible outcomes in the arrangement is finite, one possible outcome being the arrangement claimed by the Appellant.

With regards to the Appellant's argument regarding motivation and/or reason for the modification in the prior art KSR forecloses the argument that a specific teaching, suggestion, or motivation is required to support a finding of obviousness.

- B. There is criticality to the arrangement of links which is an improved work angle/area.

It is the Examiner's position the work angle/area would be a design parameter which one of ordinary skill in the art would use when arranging the links of Takagi. When given the list of design parameters one of ordinary skill in the art would indeed arrange the links as need. If the design parameter happens to be to achieve the

maximum work angle/area one would arrange the links in such a way to cover as much volume of a sphere around the robot which has a radius equal to the distance from the base of the robot to the tip of the arm when fully extended.

- C. Arranging the links in a particular order would modify the operation of Takagi.

Rearranging the links of Takagi would not change how the arm operates. The links would still be driven in the same manner and the arm would still be able to move. The only change would be the work area and axis intersection points of the axes of the links.

Regarding the Appellant's remarks that criticality for the specific arrangement has been demonstrated it is the Examiner's position that the work area is not a critical feature but a material of known link arrangement. The Appellant has also openly admitted in there specification that other arranges would indeed be obvious. Page 27 lines 11-17 of the specification states:

Although the invention has been described in its preferred embodiments with a certain degree of particularity, obviously many changes and variations are possible therein. It is therefore to be understood that the present invention may be practiced otherwise than as specifically described herein without departing from the scope and spirit thereof.

Since all the links have been shown to be known at the time of the invention by the Appellant it is believed that there arrangement would indeed be obvious.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/JAMES PILKINGTON/

Examiner, Art Unit 3682

Conferees:

Richard Ridley/Richard WL Ridley/

Supervisory Patent Examiner, Art Unit 3682

Meredith Petravick /mcp/

Appendix A- Claims Appendix

8. An articulated manipulator comprising:

a base;

first to sixth links arranged in series on the base; and

a plurality of joints rotatably connecting the base and the first link, and the two adjacent links out of the first to sixth links,

wherein, the joints include first and second coaxial joints and first to fourth diagonal joints,

the first link is connected to a base by the first coaxial joint for rotation about a rotation axis coaxial with an axis of the first link,

the first link and the second link are connected to each other by the first diagonal joint for rotation about a rotation axis inclined at an angle of 45 degrees relative to the first axis of the first link,

the second link and the third link are connected to each other by the second diagonal joint for rotation about a rotation axis inclined at an angle of 45 degrees relative to the axis of the second link, the rotation axis being parallel to the rotation axes of the first and second links,

the third link and the fourth link are connected to each other by the third diagonal joint for rotation about a rotation axis inclined at an angle of 45 degrees relative to the axis of the third link, the rotation axis being perpendicular to the rotation axes of the second and third links,

the fourth link and the fifth link are connected to each other by the second coaxial joint for rotation about a rotation axis coaxial with the axis of the fourth link, and the fifth link and the sixth link are connected to each other by the fourth diagonal joint for rotation about a rotation axis inclined at an angle of 45 degrees relative to the axis of the fifth link.

9. The articulated manipulator according to claim 1, wherein the second link consists of two sublinks connected for rotation about their axes.

10. The articulated manipulator according to claim 8, wherein the sixth link is provided with a twist unit for connecting a predetermined terminal device to the sixth link so as to be rotatable about a rotation axis aligned with the axis of the sixth link.